REMARKS

The claims have been amended to more clearly define the invention as disclosed in the written description. In particular, claims 2 and 5 have each been made proper independent claims, each including the limitation of the parent and any intervening claims. In addition, the claims have been amended for clarity.

The Examiner has finally rejected claims 1, 4, 6 and 7 under 35 U.S.C. 102(b) as being anticipated by U.S. patent 5,412,435 to Nakajima. Applicants acknowledge that the Examiner has found claims 2, 3 and 5 allowable over the prior art of record.

In view of the above changes, Applicants believe that claims 2, 3 and 5 should now be allowed.

The Nakajima patent discloses interlaced video signal motion compensation prediction system in which motion vectors are generated for selected groups of pixels in one image and corresponding groups of pixels in a second image. These motion vectors are applied to a selector 43 which selects one of the motion vectors in response to a comparison by a comparator 42.

The subject invention, as claimed, includes "generating motion vectors, each motion vector corresponding to a group of pixels of one image, between a group of pixels of said one image and a second group of pixels of another image in the data-signal", "generating interpolated results as a function of these motion vectors", "estimating the reliability of each motion vector

corresponding to a particular group of pixels", "calculating weights as a function of the reliability of the motion vectors", and "generating an interpolated luminous intensity of a group of pixels for an interpolated image by calculating, on the basis of these weights, a weighted average of the interpolated results".

As noted in MPEP 2131, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Further, "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Applicants submit that while Nakajima arguably discloses generating motion vectors, and estimating the reliability of each motion vector (note that the motion vectors from the motion vector estimators 31-3n include prediction error signals E1-En), Nakajima neither discloses or suggests "calculating weights as a function of the reliability of the motion vectors", "generating interpolated results as a function of these motion vectors", and "generating an interpolated luminous intensity of a group of pixels for an interpolated image by calculating, on the basis of these weights, a weighted average of the interpolated results".

With regard to the limitation "calculating weights as a function of the reliability of the motion vectors", in Nakajima, the reliability of the motion vectors V1 ... Vn are the prediction error signals E1 ... En. According to Nakajima at col. 11, lines 21-24, these prediction error signals E1 ... En are given handicap values (weighted) corresponding to the number of vectors according to coded information CI. Hence, the weighting in Nakajima is not a function of the reliability of the motion vectors, but rather corresponds to a number of vectors.

In the current Office Action, the Examiner states:

> "In fig. 20, Nakajima discloses the inputted motion vectors V1 ... Vn to element 43, the selection, is done to process or interpolate the results of the motion vectors V1 ... Vn obtained via the motion vector estimators 31 ... 3n. Finally, at the end of the process or interpolation, whereby element 43 considers the information from elements 41 and 42 that incorporates the data of the weights E1 ... En, the best processed or interpolated results are outputted from element 43. Thus, Nakajima discloses "generating interpolated results as a function of these motion vectors".

However, according to Nakajima at col. 11, lines 2-10, the values V1 ... Vn are motion vectors, while E1 ... En are block prediction errors. At col. 11, lines 19-29, Nakajima states:

> "Prediction errors E1, E2 . . . , En output from the 1-, 2-, . . . , n-vector motion estimators 31, 32 . . . , 3n are input to a pre-processor 41, and the individual prediction errors are given handicap values corresponding to the number of vectors according to coded information CI. The signals given the handicap values are compared in a comparator 42 for selection of one of them for each block, and a selection flag ZM

> indicative of the selected signal is output. According to the result obtained in the comparator 42, a selector 43 effects motion vector selection to output motion vector ZV."

It should be clear from this passage that the block prediction errors E1 ... En are weighted (given handicap values) in the pre-processor 41, and the weighted block prediction errors are then compared in the comparator 42 for selecting one of the block prediction errors E1 ... En. The selected block prediction error is then applied to the selector 43 to select the output motion vector ZV from the applied motion vectors V1 ... Vn. Hence, contrary to the Examiner's statements, there is no interpolation. Rather, there is a selection of one of the block prediction errors E1 ... En and the selection of one of the motion vectors V1 ... Vn based on the selected block prediction error.

The Examiner then states:

> "Also in Nakajima's fig. 20, the results that are outputted from element 43, clearly are obtained by incorporating the weights E1 ... En, i.e., luminous intensity, from elements 31 ... 3n. The weights E1 ... En are inputted to elements 41 and 42 where the data is processed or interpolated to generate interpolated data to send to element 43 that takes the weighted data E1 ... En into consideration, and that element 43 yields the best processed or interpolated results for the generation of interpolated luminous intensity, ie. Weighted data, of a group of pixels for an interpolated image. Weighted data E1 ... En are obtained from interpolated luminous intensity or the luminance differences to determine the differences in motion in order to properly determine the best representative luminous intensity of the image data. Thus, Nakajima teaches "generating an interpolated image by

calculating, on the basis of these weights, a weighted average of the interpolated results".

This statement of the Examiner is incredible, especially when compared to that which is specifically stated in Nakajima (above). Applicants submit that the sole intent of Nakajima is to generate motion vectors with the smallest prediction errors.

Nakajima mentions interpolation in describing the inter-field interpolated motion estimator 14 (Figs. 4, 13), intra-field interpolation circuit 22 (Figs. 7, 9, 11, 16), intra-frame interpolation circuit 28 (Fig. 14). However, in each case, these circuits receive the input and reference block data (10 and 11), and are used to generate motion vectors. This is just the opposite from the subject invention as claimed, to wit, "generating interpolated results as a function of these motion vectors" and "generating an interpolated luminous intensity of a group of pixels for an interpolated image by calculating, on the basis of these weights, a weighted average of the interpolated results".

In view of the above, Applicants believe that the subject invention, as claimed, is neither anticipated nor rendered obvious by Nakajima, and as such, is patentable thereover.

Applicants believe that this application, containing claims 1-7, is now in condition for allowance and such action is respectfully requested.

In the alternative, Applicants respectfully request entry of this Amendment in that it reduces the number of issues on appeal (i.e., claims 2, 3 and 5 would be deemed allowed).

Respectfully submitted,

by
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